

	ug (+ or - std) scatter on blank mass	Detection Limit (45 ltr) (ug/m3)	Detection Limit (300 ltr) (ug/m3)
Formaldehyde	0.03681	0.82	0.12
Acetaldehyde	0.06888	1.53	0.23
Acetone	0.04129	0.92	0.14
Propionaldehyde	0.10922	2.43	0.36
Butyraldehyde	0.03924	0.87	0.13
Benzaldehyde	0.01442	0.32	0.05
Isovaleraldehyde	0.02784	0.62	0.09
Valeraldehyde	0.01684	0.37	0.06
Hexaldehyde	0.01049	0.23	0.03

Table 1 Detection sensitivities for pumped DNPH samplers.

**PUMPED TUBES AND GMD BADGES RESULTS FOR THE TEDDINGTON SITE**

**Pumped Tubes** Actual Temperature = 7.5°C

Pumped Samples were taken on the 24/1/00 between 12.00 -12.30 pm.  
Results in ug/m3 @ 25°C

Location	With Ozone Scrubber					No Ozone Scrubber			Blank Values Corrected			
	T1*	T2	T3	T4	Average	N1	N2	Average	B1	B2	B3	Average
Formaldehydve	0.840	3.130	3.345	3.150	3.208	3.544	7.897	4.883	1.046	0.209	0.000	0.418
Acetaldehydve	1.119	2.990	3.414	2.590	2.998	5.073	3.602	3.891	0.000	0.070	0.488	0.186
Acrolein												
Acetone	1.609	3.686	4.529	3.921	4.045	2.641	2.217	2.968	0.000	0.139	0.139	0.093
Propionaldehydve	0.840	2.086	1.672	1.680	1.813	1.876	1.455	1.715				
Crotonaldehydve												
Butyraldehydve			0.836		0.836	1.042	2.286	1.388				
Benzaldehydve		0.626			0.626		0.831	0.729				
Isovaleraldehydve												
Valeraldehydve												
o-Tolualdehydve												
m-Tolualdehydve												
p-Tolualdehydve												
Hexaldehydve											0.209	0.209
2,5-Dimethylbenzaldehydve												
<b>Continuous Analyser</b>												
Formaldehydve	4.129	4.129	4.052	4.052	4.078	3.976	3.976	3.976				
Percentage difference	79.66681	24.20682	17.45298	22.24957	21.3214	10.85487	-98.60576	-22.81377				

T1\* Result not included in average due to anomaly with the result.

**GMD BADGES RESULTS** Actual Temperature = 7.0°C

Results in ug/m3 @ 25°C

Location	24/1/00 - 31/1/00						3/2/00 - 10/2/00					
	WEEK 1						WEEK 2					
	T1	M2	Average	Blank 1	Blank 2	Average	M1	M2	Average	Blank 1	Blank 2	Average
Formaldehydve	2.625		2.625	0.794		0.794	1.904	1.802	1.853	1.054	0.986	1.020
<b>Continous Analyser</b>												
Formaldehydve	3.18	3.18	3.18									
Percentage difference	17.46813		17.46813									

Table 2 Pumped DNPB cartridge and diffusive DNPB badge measurements at Teddington.

Time Period	CO			NO			NO <sub>2</sub>			Benzene			Toluene		
	M	C	R <sup>2</sup>	M	C	R <sup>2</sup>	M	C	R <sup>2</sup>	M	C	R <sup>2</sup>	M	C	R <sup>2</sup>
15 minutes	3.621	2.0584	0.772	0.035	4.288	0.833	0.173	3.648	0.477						
30 minutes	3.701	1.794	0.805	0.035	4.341	0.846	0.216	1.215	0.605						
60 minutes	3.726	1.787	0.800	0.034	4.654	0.849	0.252	-0.769	0.717	1.686	6.841	0.282	0.463	6.843	0.281

Table 3 Correlation of formaldehyde, CO, NO<sub>x</sub>, NO<sub>2</sub>, benzene and toluene at Marylebone Road.

**PUMPED TUBES AND GMD BADGES RESULTS FOR THE MARYLEBONE ROAD SITE**

**Pumped Tubes**

Actual Temperature = 7.5°C

Pumped Samples were taken on the 28/1/00.  
Results in ug/m3 @ 25°C

Location	9.21 to 9.51 am				12.00 to 12.30 pm				14.00 to 14.30 pm			
	PERIOD 1				PERIOD 2				PERIOD 3			
	M1	M2	M3	Average	M4	M5	M6	Average	M7	M8	M9	Ave.
Formaldehyde	11.266	11.498	11.429	11.398	11.058	10.257	10.182	10.499	13.507	13.588	13.188	13.428
Acetaldehyde	5.424	6.481	5.611	5.839	4.173	3.768	4.987	4.309	4.779	5.644	4.815	5.079
Acrolein												
Acetone	4.068	4.495	4.052	4.205	3.025	2.826	3.637	3.163	3.013	3.449	3.245	3.236
Propionaldehyde	3.651	3.867	3.844	3.788	3.234	3.454	3.429	3.372	3.637	4.286	3.873	3.932
Crotonaldehyde												
Butyraldehyde												
Benzaldehyde	0.939	1.150	1.351	1.146	0.001	0.942	1.143	0.695	1.766	1.568	1.570	1.635
Isovaleraldehyde												
Valeraldehyde	0.522			0.522		0.523	0.520	0.521		0.523		0.523
o-Tolualdehyde												
m-Tolualdehyde												
p-Tolualdehyde												
Hexaldehyde												
2,5-Dimethylbenzaldehyde												
<b>Continuous Analyser</b>												
Formaldehyde	18.666	18.666	18.666	18.666	15.811	15.811	15.811	15.811	18.328	18.328	18.328	18.328
Percentage difference	39.6432	38.40261	38.76975	38.93852	30.06409	35.1266	35.59919	33.59662	26.30248	25.86059	28.04592	26.73633

Location	16.00 to 16.30 pm			
	M10	M11	M12	Ave.
Formaldehyde	15.585	16.097	15.281	15.654
Acetaldehyde	7.273	5.435	6.489	6.399
Acrolein				
Acetone	3.637	3.240	3.035	3.304
Propionaldehyde	4.883	4.704	4.291	4.626
Crotonaldehyde				
Butyraldehyde				
Benzaldehyde	1.974	1.777	1.779	1.843
Isovaleraldehyde				
Valeraldehyde	0.520	0.732	0.314	0.522
o-Tolualdehyde				
m-Tolualdehyde				
p-Tolualdehyde				
Hexaldehyde	0.520			0.520
2,5-Dimethylbenzaldehyde				
<b>Continous Analyser</b>				
Formaldehyde	20.538	20.538	20.538	20.538
Percentage difference	24.11469	21.62394	25.59628	23.7783

**GMD Badges Results**

Actual Temperature = 8°C

Results in ug/m3 @ 25°C

Location	26/1/00 - 3/2/00						3/2/00 - 9/2/00					
	WEEK 1						WEEK 2					
	M1	M2	Average	Blank 1	Blank 2	Average	M1	M2	Average	Blank 1	Blank 2	Average
Formaldehyde	10.792	9.664	10.228	1.391	1.316	1.354	8.399	8.797	8.598	1.370	1.636	1.503
<b>Continous Analyser</b>												
Formaldehyde	13.4	13.4	13.4									
Percentage difference	19.46268	27.88122	23.67195									

Table 4 Pumped DNPH cartridge and diffusive DNPH badge measurements at Marylebone Road.

**PUMPED TUBES AND GMD BADGES RESULTS FOR THE SOUTHAMPTON SITE**

**Pumped Tubes**

Actual Temperature = 9°C

Pumped Samples were taken on the 14/2/00.  
Results in ug/m3 @ 25°C

Location	9.00 to 9.30 am				11.00 to 11.30 pm				13.00 to 13.30 pm			
	PERIOD 1				PERIOD 2				PERIOD 3			
	S1	S2	S3	Average	S4	S5	S6	Average	S7	S8	S9	Ave.
Formaldehyde	1.675	1.669	1.672	1.672	1.463	1.467	1.256	1.396	1.677	2.093	1.247	1.672
Acetaldehyde	2.407	3.025	2.613	2.682	3.658	2.201	3.454	3.104	3.459	3.454	2.390	3.101
Acrolein												
Acetone	1.622	1.826	2.665	2.038	0.993	1.205	1.413	1.204	1.415	1.622	1.610	1.549
Propionaldehyde												
Crotonaldehyde												
Butyraldehyde												
Benzaldehyde	0.576		1.202	0.889		0.786	0.785	0.786		0.994	0.987	0.991
Isovaleraldehyde												
Valeraldehyde												
o-Tolualdehyde												
m-Tolualdehyde												
p-Tolualdehyde												
Hexaldehyde					0.575			0.575		0.576		0.576
2,5-Dimethylbenzaldehyde												
<b>Continuous Analyser</b>												
Formaldehyde	2.640	2.640	2.640	2.640	2.410	2.410	2.410	2.410	2.379	2.379	2.379	2.379
Percentage difference	36.56689	36.77777	36.65141	36.66536	39.27999	39.11774	47.88483	42.09419	29.5136	12.00956	47.59033	29.7045

Location	15.00 to 15.30 pm			
	PERIOD 4			
	S10	S11	S12	Ave
Formaldehyde	2.286	2.300	1.878	2.154
Acetaldehyde	3.844	2.195	3.442	3.161
Acrolein				
Acetone	1.818	1.620	2.243	1.894
Propionaldehyde				
Crotonaldehyde				
Butyraldehyde				
Benzaldehyde	0.779	0.993	0.782	0.852
Isovaleraldehyde				
Valeraldehyde				
o-Tolualdehyde				
m-Tolualdehyde				
p-Tolualdehyde				
Hexaldehyde				
2,5-Dimethylbenzaldehyde				
<b>Continous Analyser</b>				
Formaldehyde	3.653	3.653	3.653	3.653
Percentage difference	37.42547	37.05027	48.59841	41.02471

**GMD Badges Results**

Actual Temperature = 10.5°C

Results in ug/m3 @ 25°C

Location	07/2/00 - 14/2/00						14/2/00 - 21/02/00					
	WEEK 1						WEEK 2					
	S1	S2	Average	Blank 1	Blank 2	Average	S1	S2	Average	Blank 1	Blank 2	Average
Formaldehyde	3.929	5.837	4.883	2.021	2.582	2.301	4.697	4.200	4.449	1.184	1.260	1.222
<b>Continous Analyser</b>												
Formaldehyde	2.302	2.302	2.302									
Percentage difference	-70.6719	-153.57	-112.121									

Table 5 Pumped DNPH cartridge and diffusive DNPH badge measurements at Southampton.

**PUMPED TUBES AND GMD BADGES RESULTS FOR THE ROCHESTER RURAL SITE**

**Pumped Tubes**

Actual Temperature = 12°C

Pumped Samples were taken on the 25/2/00 between 9.00 am - 15.30 pm.  
Results in ug/m3 @ 25°C

	9.00 am - 9.30 am	11.00 am - 11.30 am	13.06 pm - 13.36 pm	15.00 pm - 15.30 pm	Period 1-4
Location	Period 1	Period 2	Period 3	Period 4	Average
Formaldehyde	0.319	0.958	0.954	0.532	0.691
Acetaldehyde	1.010	2.928	2.067	1.863	1.967
Acrolein					
Acetone	1.808	2.236	3.285	2.662	2.498
Propionaldehyde	0.213	1.491	1.272	0.639	0.904
Crotonaldehyde					
Butyraldehyde					
Benzaldehyde	0.638	0.639	0.424	0.426	0.532
Isovaleraldehydve					
Valeraldehyde	0.284	0.284	0.283	0.284	0.284
o-Tolualdehyde					
m-Tolualdehyde					
p-Tolualdehyde					
Hexaldehyde	0.798	1.012	1.007	1.012	0.957
2,5-Dimethylbenzaldehyde					
<b>Continuous Analyser</b>					
Formaldehyde	1.121	1.320	1.600	1.151	1.298
Percentage difference	71.54247118	27.40111463	40.38468191	53.7452801	46.77289868

**GMD Badges Results**

Actual Temperature = 10°C

Results in ug/m3 @ 25°C

21/2/00 - 25/2/00					
WEEK 1					
Location	R1	R2	Average	Blank 1	Blank 2
Formaldehyde	3.529	2.200	2.864	1.798	1.997
<b>Continous Analyser</b>					
Formaldehyde	1.232	1.232	1.232		
Percentage difference	-65.08805123	-43.989199	-56.98664592		
25/2/00 - 01/03/00					
WEEK 2					
	R1	R2	Average	Blank 1	Blank 2
	2.826	2.826	2.826	1.440	1.440
					Average
					1.440

Table 6 Pumped DNPH cartridge and diffusive DNPH badge measurements at Rochester.

**PUMPED TUBES AND GMD BADGES RESULTS FOR THE INDUSTRIAL SITE**

**Pumped Tubes**

Actual Temperature = 10°C

Pumped Samples were taken on the 29/2/00 between 9.00 am - 15.30 pm.  
Results in ug/m3 @ 25°C

	9.00 am - 9.30 am	11.00 am - 11.30 am	13.00 pm - 13.30 pm	15.00 pm - 15.30 pm	Period 1-4
Location	Period 1	Period 2	Period 3	Period 4	Average
Formaldehyde	3.484	2.631	2.830	2.210	2.789
Acetaldehyde	4.804	3.946	8.333	7.104	6.047
Acrolein					
Acetone	3.484	2.420	3.878	3.683	3.367
Propionaldehyde	7.602	5.472	17.190	14.944	11.302
Crotonaldehyde					
Butyraldehyde	-0.264		7.075	3.736	3.516
Benzaldehyde	0.211	0.421	-0.210		0.141
Isovaleraldehyde	-0.211	0.631		0.842	0.421
Valeraldehyde	0.282	0.281	0.070	0.281	0.228
o-Tolualdehyde					
m-Tolualdehyde					
p-Tolualdehyde					
Hexaldehyde	1.003	0.789	0.996	1.631	1.105
2,5-Dimethylbenzaldehyde					
<b>Continuous Analyser</b>					
Formaldehyde	6.969	5.618	7.675	3.362	5.906
Percentage difference	50.00089609	53.16928204	63.12527322	34.26538437	52.77886749

**GMD Badges Results**

Actual Temperature = 10°C

Results in ug/m3 @ 25°C

29/2/00 - 07/3/00					
WEEK 1					
Location	R1	R2	Average	Blank 1	Blank 2
Formaldehyde	2.323	2.284	2.304	0.813	0.736
<b>Continous Analyser</b>					
Formaldehyde	2.402	2.402	2.402		
Percentage difference	3.293906259	4.905674488	4.099790373		
07/3/00 - 14/03/00					
WEEK 2					
	R1	R2	Average	Blank 1	Blank 2
	2.877	2.110	2.493	1.036	0.805
					0.921

Table 7 Pumped DNPH cartridge and diffusive DNPH badge measurements at an Industrial site.

**PUMPED TUBES AND GMD BADGES RESULTS FOR THE ROTHERHAM SITE****Pumped Tubes**

Actual Temperature = 14°C

Pumped Samples were taken on the 09/3/00 between 9.15 am - 15.45 pm.

Results in ug/m3 @ 25°C

	9.15 am - 9.45 am	11.15 am - 11.45 am	13.15 pm - 13.45 pm	15.15 pm - 15.45 pm	Period 1-4
Location	Period 1	Period 2	Period 3	Period 4	Average
Formaldehyde	1.617	2.256	0.970	0.970	1.453
Acetaldehyde	7.708	10.691	2.101	4.258	6.189
Acrolein					
Acetone	5.067	3.116	3.124	3.773	3.770
Propionaldehyde	18.111	3.868	6.033	11.212	9.806
Crotonaldehyde					
Butyraldehyde	7.708		-0.054	1.887	3.180
Benzaldehyde	0.216	2.364	-0.215		0.788
Isovaleraldehyde					
Valeraldehyde	0.287		0.072	0.072	0.144
o-Tolualdehyde		0.860			0.860
m-Tolualdehyde					
p-Tolualdehyde					
Hexaldehyde	1.455	-0.269	1.239	1.024	0.862
2,5-Dimethylbenzaldehyde					
<b>Continuous Analyser</b>					
Formaldehyde	0.461	0.491	0.507	0.522	0.495
Percentage difference	-250.769264	-359.5291869	-91.23799303	-85.86739162	-193.4446756

**GMD Badges Results**

Actual Temperature = 12°C

Results in ug/m3 @ 25°C

9/3/00 - 16/3/00					
WEEK 1					
Location	B1	B2	Average	Blank 1	Blank 2
Formaldehyde	1.852	1.663	1.758	0.832	0.609
<b>Continous Analyser</b>					
Formaldehyde	0.601	0.601	0.601		
Percentage difference	-208.2020423	-176.7528543	-192.4774483		
16/3/00 - 22/03/00					
WEEK 2					
	B 1	B2	Average	Blank 1	Blank 2
	2.939	2.766	2.852	1.080	1.124
					Average
					1.102

Table 8 Pumped DNPH cartridge and diffusive DNPH badge measurements at Rotherham.



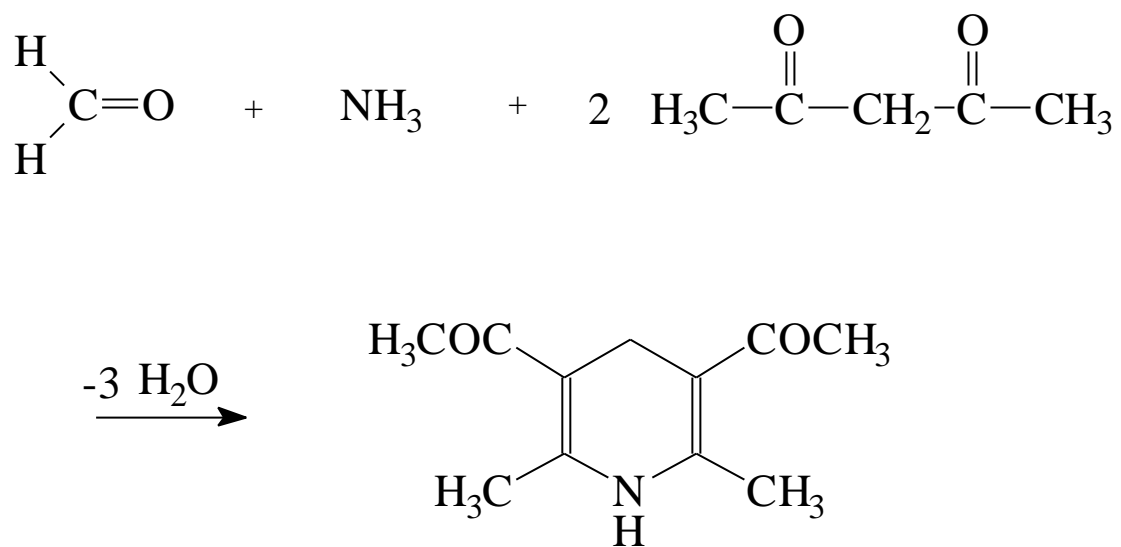


Figure 1-The Hantzsch reaction

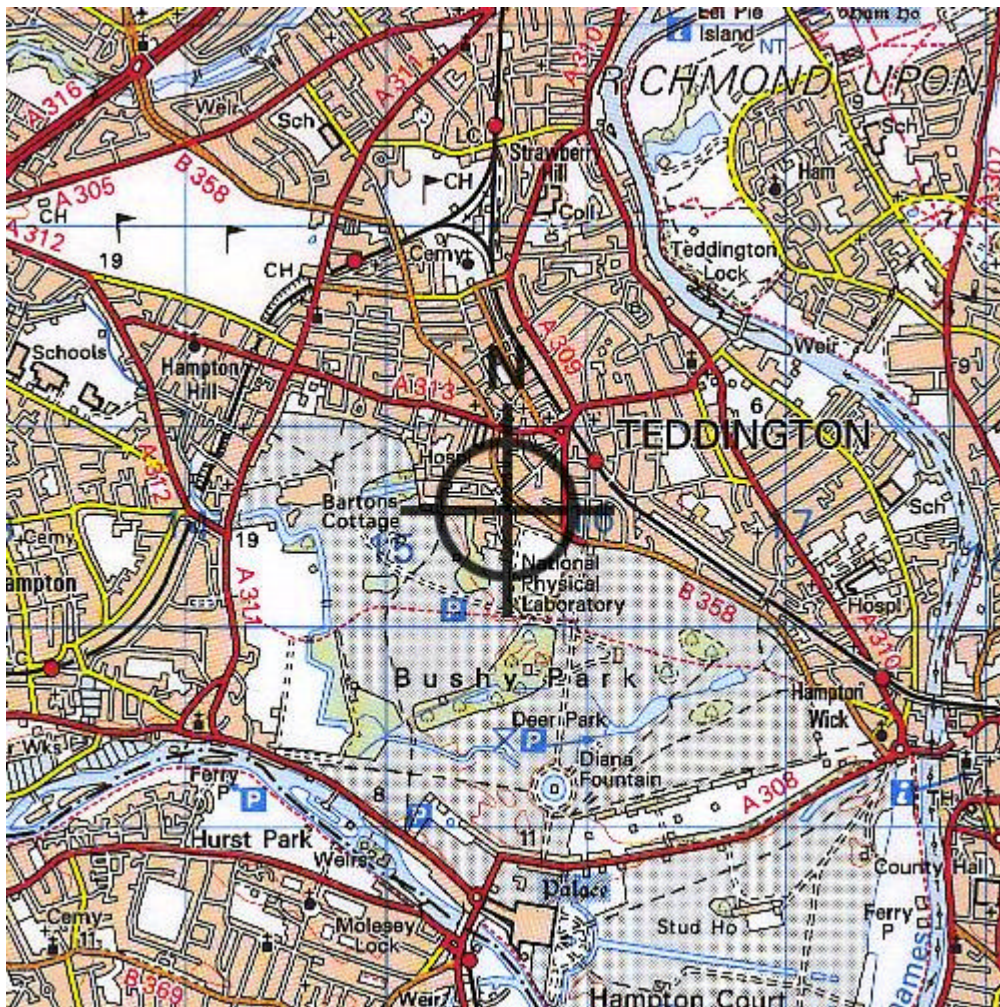


Figure 2 - Location of the suburban site measurements (NPL, Teddington).



Formaldehyde concentrations at Teddington site

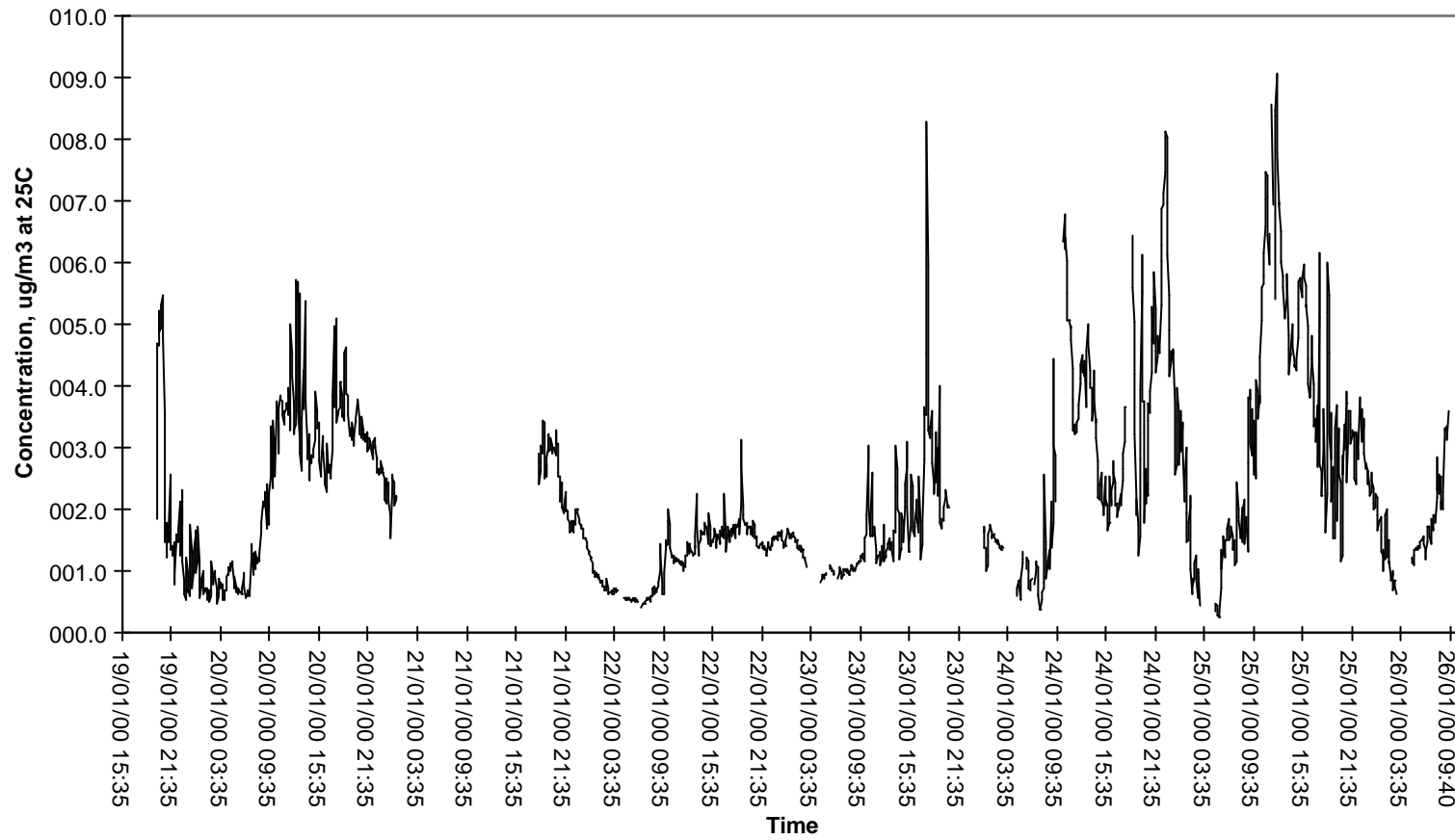


Figure 3 - Time series of formaldehyde measurements at Teddington.

### NO<sub>x</sub> and NO concentrations at Teddington site

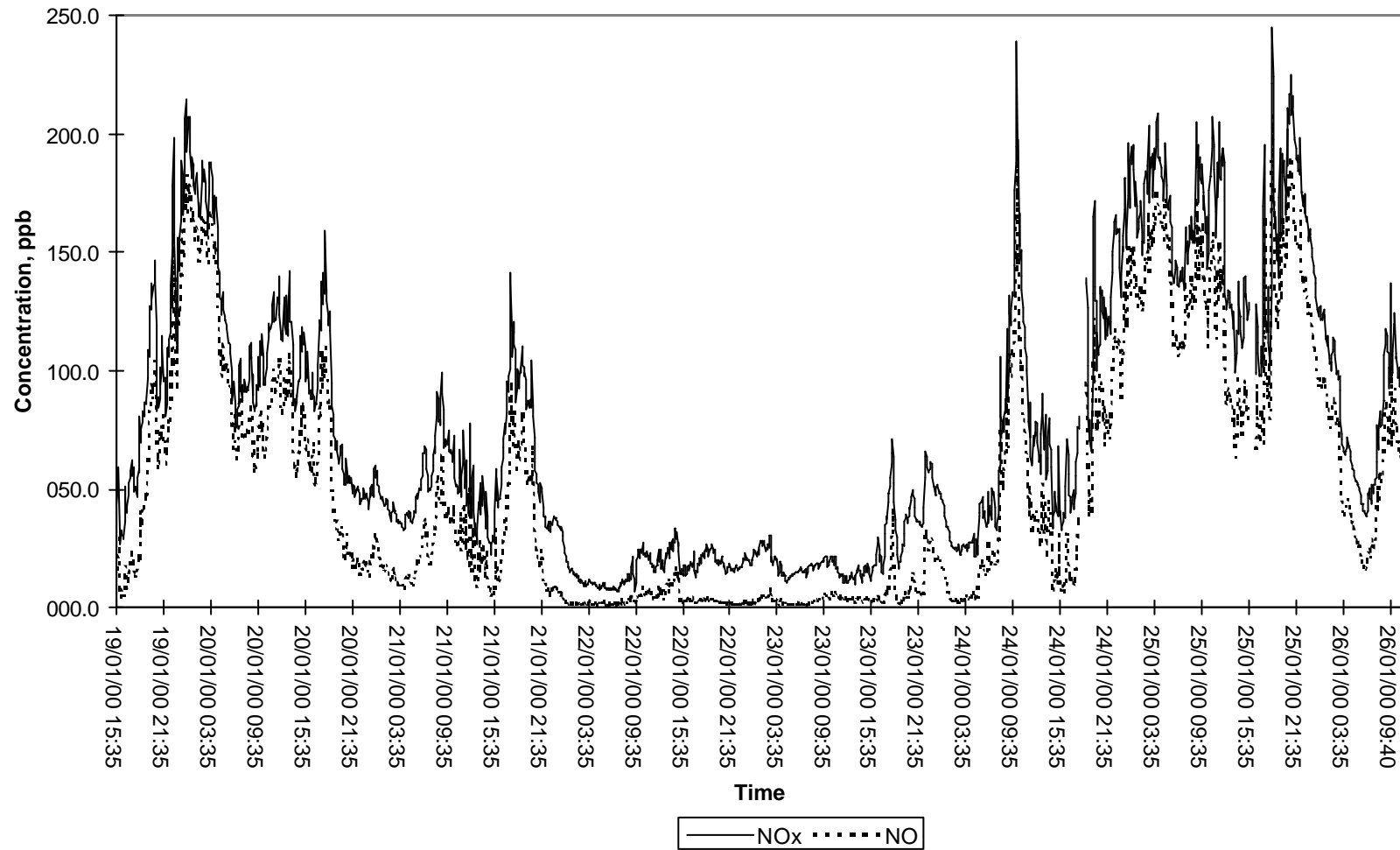


Figure 4 - Time series of NO<sub>x</sub>/NO measurements at Teddington.

